

## AMANA 80

MODEL NUMBER:	GUIC and GCIC
BTU SIZES:	45,000 - 140,000 BTU'S

### ACCESSIBILITY CLEARANCE

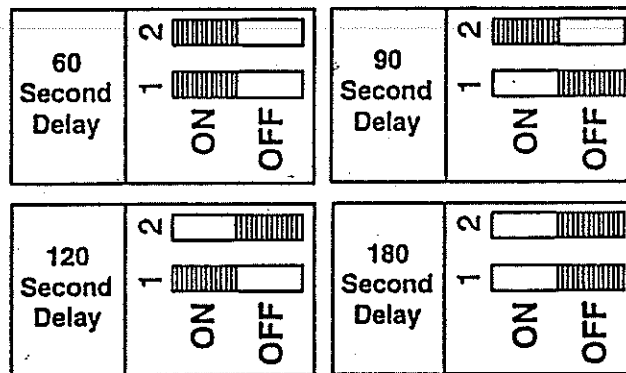
Allow clearances from the enclosure as shown on Specification sheet for fire protection, proper operation, and service access. These clearances must be permanently maintained. The combustion and ventilating air openings in the front and top panels of the furnace must never be obstructed.

### CLEARANCE FROM COMBUSTIBLE MATERIAL

Back = 0"                                      Sides = 0"  
 Front = 6" / 3" if Type "B" vent is used

### COLD AIR RETURN AIR DUCTS

As shipped, the circulation fan will remain on for 90 seconds after the gas valve closes. If desired, this timing may be adjusted. The adjustment switches are near the low voltage terminal strip



A closed return duct system must be used, with the return duct connected to the furnace. Supply and return connections to the furnace may be made with flexible joints to reduce noise transmission. To prevent the blower from interfering with combustion air or draft when a central return is used, a connecting duct must be installed between the unit and the utility room wall. A room, closet, or alcove must not be used as a return air chamber.

When a furnace is installed so that supply ducts carry air circulated by furnace to areas outside the space containing the furnace, the return air shall also be handled by a duct sealed to the furnace casing and terminating outside the space containing the furnace.

Blower motor - The air circulating blower motor bearings are permanently lubricated. No further lubrication is required.

GARAGE

When installed in a residential garage, the furnace must be positioned so the burners and ignition source are located not less than 18 inches above the floor and protected from physical damage by vehicles.

GENERAL

Heat anticipator must be set at 0.7 amps.

HIGH ALTITUDE INSTALLATIONS

Deration	High altitude natural gas kit for use with all GUIC and GCIC furnaces 6,000 ft to 11,000 ft.
Orifice	
Regulator Pressure	Inlet gas pressure minimum 5.0" w.c. / Maximum 10.0" w.c.
Pressure Switch	

The furnace will naturally derate itself with altitude. Do not attempt to increase the firing rate by changing orifices or increasing the manifold pressure. This can cause poor combustion and equipment failure.

At all altitudes, the manifold pressure must be within 0.3" w.c. of that listed on the "Specification sheet" for the fuel used. At all altitudes and with either fuel, the air temperature rise must be within the range listed on the furnace nameplate.

For natural gas, the manifold pressure must be between 3.2 and 3.8 inches water column (3.5 nominal).

MOBILE HOME

Do not install in a mobile home.

VENTING MATERIAL AND REQUIREMENTS

Vent Pipe	Type "C" or Type "B"
Vent Fittings	Follow the GAMA vent tables

VENT CLEARANCE FROM COMBUSTIBLE MATERIAL

Type "C" = 6"  
Type "B" = 1"

## VENTING PROCEDURE

When vented as Category I, this furnace is considered a fan-assisted appliance, which has an induced draft blower to draw products of combustion through the heat exchanger, and under some conditions may be vented in common with natural draft appliances (such as most water heaters).

Common venting with specific Amana Category I 80% furnaces is allowed with the addition of a common vent kit (CVK) for each appliance. Contact the local installing dealer, distributor or Amana directly for more information.

For Category I venting, the minimum vent diameter is as shown below:

### MINIMUM VENT DIAMETER

<u>MODEL</u>	<u>GUI</u>	<u>GCI</u>
45	3 inch	4 inch
70	4 inch	4 inch
90	4 inch	4 inch
115	5 inch	5 inch
140	5 inch	5 inch

## MISCELLANEOUS INFORMATION/NOTES

This furnace must use indoor air for combustion. It cannot be installed as a direct vent (i.e., sealed combustion) furnace. The burner box is present only to help reduce sound transmission from the burners to the occupied space.

### Rollout Protection Device

**IMPORTANT NOTE:** This furnace is equipped with a device to close the gas valve if the burner flames are not drawn into the heat exchanger. GUI - furnaces installed horizontal right-to-left airflow, the device must be relocated. GCI - furnaces installed horizontal left-to-right airflow, the device must be relocated.

The fuel or combustion air supply can create a nearly invisible coating on the flame sensor. This coating acts as an insulator, causing a drop in the flame sensing signal. To remove this coating, a qualified servicer should carefully clean the flame sensor with emery cloth or steel wool.

If the ignitor and the surrounding air are at about 70° F and the ignitor wires are not connected to any other electrical components, the resistance of the ignitor should not exceed 200 ohms. If it does, the ignitor should be replaced.

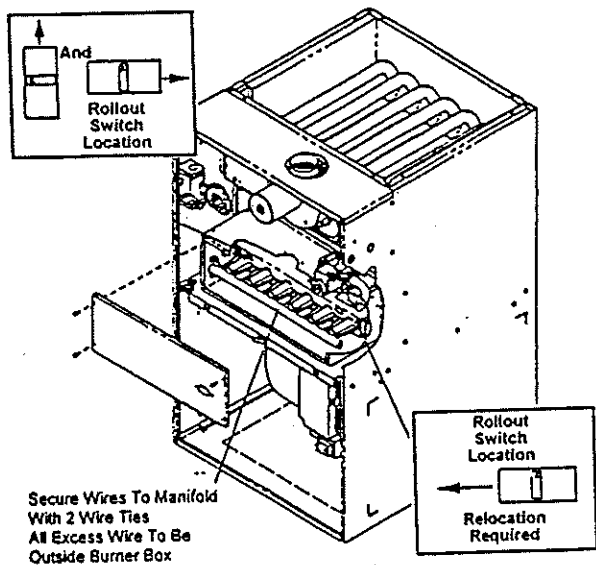


Figure 31  
Rollout Switch Relocation (Upflow)

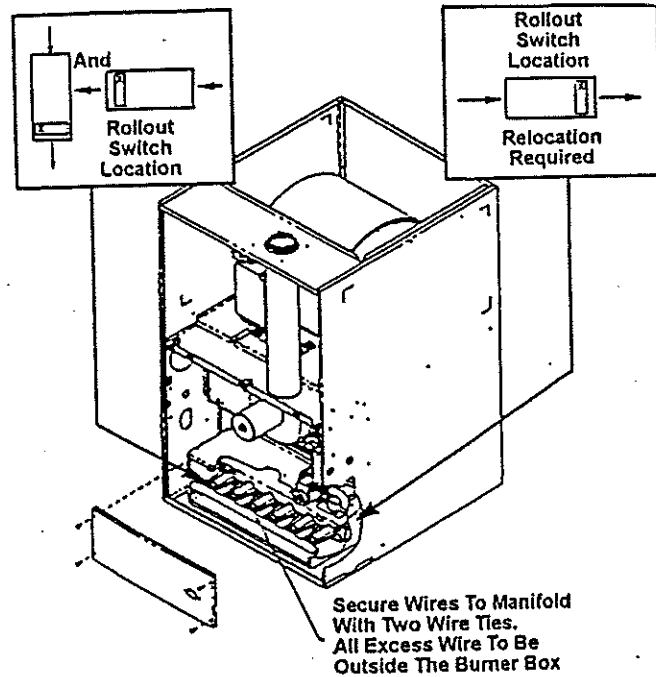


Figure 32  
Rollout Switch Relocation (Counterflow)

## SEQUENCE OF OPERATION (Integrated Ignition Control)

### Normal Heating Sequence

1. Thermostat calls for heat.
2. The vent blower is energized.
3. The ignitor is energized and is allowed to preheat for 17 seconds.
4. The gas valve is energized delivering gas to the burners and starting combustion.
5. The control checks for a signal from the flame sensor within seven seconds after the gas valve is energized. Gas will only continue to flow if a signal is present.
6. The control waits 30 seconds and turns on the air circulation blower to the speed that was selected for heating operation.
7. The thermostat is satisfied and opens.
8. The control de-energizes the gas valve.
9. After a five or 15 second delay while flue products are purged from the furnace heat exchanger, the vent blower motor is de-energized.
10. The air circulation blower has an adjustable delay-off

timing of 60, 90, 120 or 180 seconds (starting from the time the gas valve closes). This allows more heat from the furnace to be transferred to the conditioned space. After this time has elapsed, the blower will be de-energized.

### Abnormal Operation - Integrated Ignition Control

1. **Internal Control Failure with Integrated Ignition Control** - If during a self test cycle, the control determines an internal fault, the control stops and the diagnostic light will light continuously. The control should be replaced.
2. **System lockout** - If flame was not sensed during the first 7 seconds after the gas valve was energized, the control turns off the gas. There will then be a 60 second delay with the combustion blower energized to purge the heat exchanger. The ignitor will then be energized and preheated for 27 seconds. The gas valve will be energized. If flame is not sensed in 7

seconds the gas valve will be de-energized and another purge will occur. The control will cycle the gas valve a total of three tries before it determines it cannot establish measurable combustion and enters a locked out state. If flame is sensed but lost after 10 seconds, the control will recycle this series of three tries four more times before locking out. The diagnostic light will indicate this condition with **one short flash** followed by a longer off. The control can be reset and brought out of lockout mode by turning the thermostat off and then back on.

3. **Pressure Switch Stuck Closed** - If the control senses the pressure switch is closed when the vent blower is off, it waits until the fault is corrected. The light code for this problem is **two short flashes** followed by a longer pause. The probable cause is faulty pressure switch or wiring.
4. **Pressure Switch Stuck Open** - If, after the vent blower is energized, the pressure switch does not close, the control will keep the blower on and wait for the switch to close. The diagnostic light code for this problem is **three short flashes** followed by a pause. The probable cause is either: disconnected hose to the pressure switch, faulty pressure switch or wiring, or restricted air intake or flue piping.
5. **Open Limit Control (Primary or Auxiliary)** - If either limit control opens, the air circulation and vent blower will be turned on until the limit closes. The diagnostic light code for this is **four short flashes** followed by a pause. The probable cause is either: low conditioned air flow due to dirty filter or resistance in duct work, faulty limit, faulty blower, or blower speed set too low.
6. **Open Rollout Control** - If the rollout control opens, the air circulation blower and vent blower will be energized all the time. The diagnostic light code for this is **five short flashes** followed by a pause. Probable cause is insufficient combustion air, restricted flue passage or restricted heat exchanger.
7. **Flame Sensed with No Call for Heat** - If the control senses a flame when the gas valve is de-energized it will run the air circulation blower and vent blower continuously. The diagnostic light code for this is **continuous flashing**. Probable cause is miswiring.

## SEQUENCE OF OPERATION

(Radiant Sense Furnace)

### Normal Heating Sequence

The thermostat calls for heat, and the vent blower is energized.

2. The pressure switch closes.
3. The ignitor is energized. It will heat for at least 17 seconds, and will continue to heat until the radiant sensor determines the ignitor is hot enough (i.e., until a heat signal is produced.)
4. The gas valve is opened. Combustion begins.
5. One second after the gas valve opens, the ignitor is de-energized.
6. The radiant sensor monitors the flame. As long as flame is present and the call for heat continues, the gas valve will remain open. Either a hot ignitor or a flame can produce a heat signal.
7. 45 seconds after the gas valve opens, the control turns on the air circulation blower.
8. After the thermostat is satisfied, the call for heat ends. The gas valve closes and the vent blower is de-energized.
9. 90 seconds after the gas valve closes, the control turns off the air circulation blower.

### Abnormal Operation - Radiant Sense

1. **Internal Control Failure** - The system will **lockout**.
2. **Pressure Switch Stuck Closed** - If the control senses the pressure switch is closed while the vent blower is off, it **waits** until the switch opens. Until then, no heating components are energized. Probable cause is bad pressure switch or miswiring.
3. **Pressure Switch Stuck Open** - If the vent blower is energized and the pressure switch does not close, the control will **keep the vent blower running** until the switch closes-until then, no other heating components will be energized. Probable causes include disconnected hose to pressure switch, restricted vent system, bad pressure switch or miswiring.
4. **Ignitor Failure** - If the ignitor will not produce a heat signal within 90 seconds, the control will hold the gas valve closed and the system will **lockout**. Possible causes include cracked ignitor, miswiring or faulty radiant sensor.
5. **Flame lost within 90 seconds** - If the heat signal is lost (while the call for heat continues) from 0 to 90 seconds after the gas valve opens, the system will **retry once**. Possible causes include gas valve manually closed, air in gas line, incorrect gas pressures, incorrect burner alignment, incorrect burner gap, faulty gas valve, faulty radiant sensor.

During a retry, the gas valve closes, and the vent blower runs for 60 seconds. After the 60 seconds, a new ignition sequence begins. The system will only retry once. If the retry does not produce a flame that lasts for at least 90 seconds, the furnace will lockout.

6. **Flame lost later than 90 seconds** - If the heat signal is lost (while the call for heat continues) more than 90 seconds after the gas valve opens, the system will recycle.

During a recycle, the gas valve closes, and a new ignition sequence begins. No matter how many recycles may occur, this along will not cause the furnace to lockout.

7. **Trip on High Limit or Auxiliary Limit.** If the high limit or auxiliary limit control opens during a heating cycle, the gas valve closes. The vent blower runs, and the air circulation blower runs at "Heating" speed. This continues until the limit closes. (Note: Auxiliary limit is manual reset, so it will never close on its own.) When the limit closes, the vent blower shuts off immediately, but the air circulation blower continues to run for 90 seconds. After this 90 second cooldown is completed, a normal heating sequence can begin. Possible causes include: Low airflow due to dirty filter, dirty coil, or restricted duct work; blower speed set too low; gas input set too high; faulty limit; faulty blower.
8. **Interruption of Power Supply.** If the line voltage power is interrupted, the gas valve closes. It will remain closed until the voltage power is restored and a low voltage call for heat occurs at the room thermostat. At that time, a new ignition sequence will begin.
9. **Open Rollout Thermostat.** If the rollout thermostat opens during a heating cycle, the gas valve closes. The vent blower runs, and the air circulation

blower runs at "Heating" speed (same symptoms as trip on high limit). This will continue until the rollout thermostat is manually reset. Possible causes include: incorrect gas pressures, improper burner alignment, faulty orifice(s), restricted crossover gap(s).

#### Other Items (Integrated Ignition Control and Radiant Sense)

- A. **Lockout** (See numbers 1,4 and 5 above). The gas valve, ignitor and vent blower are de-energized immediately. (Exception: If a trip on high / auxiliary / rollout limit is combined with a lockout, the vent blower will remain energized until the limit closes.) The air circulation blower runs for 90 seconds and then shuts off.

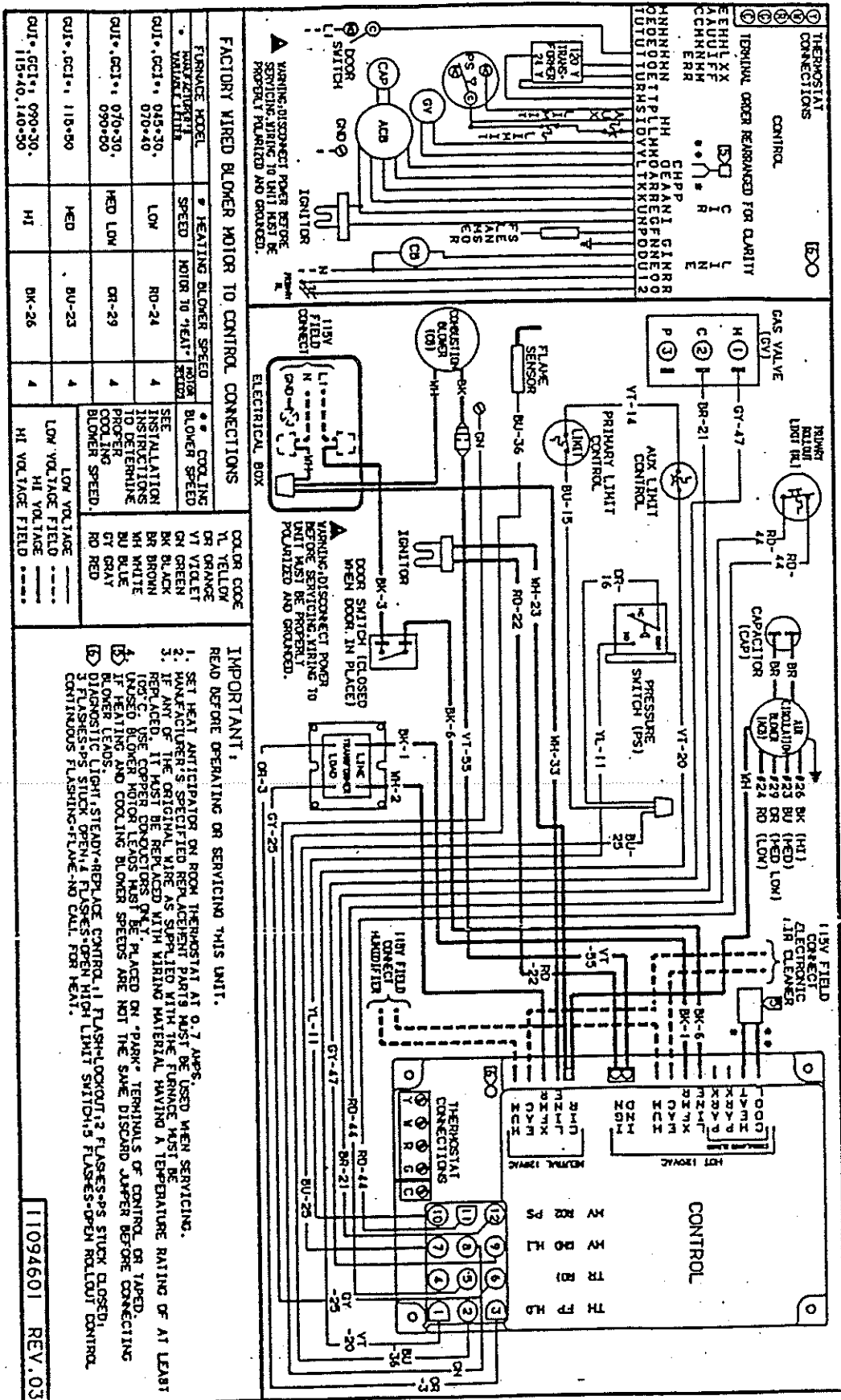
To manually end a lockout, interrupt the call for heat for at least 1 second, but not more than 20 seconds.

To automatically end a lockout, wait three hours. The control will automatically reset itself and try again.

- B. **Constant Fan** - During normal operation, the air circulation blower will continually run at "Cooling" speeds as long as power is present at terminal G. If a call for heat occurs, the blower will continue to run at cooling speed throughout the heating cycle.

If a trip on high/auxiliary/rollout limit occurs, the air circulation blower will run at "Heating" speed. Even if power is present at terminal G, the blower will run at heating speed until the limit closes.

# GUIA/GUIC Wiring Diagram



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